

NEMATODE ENTRY AND DISPERSION
BY MAN AND ANIMALS IN FLORIDA NURSERIES

R. P. Esser

INTRODUCTION: Phytoparasitic nematodes are usually limited by their small size and slow migration rate to the narrow ecological niche they occupy. In order for nematodes to arrive at and contaminate nursery plantings in soil or on benches, man and animals frequently serve as disseminators of nematodes to the new site. When the target site is a group of pest-free plants under a sanitation program, prevention of this type of contamination is of prime importance.

ENTRY AND DISPERSION BY MAN

ENTRY. The principal means by which man introduces nematodes into nurseries is in contaminated bulk soil and contaminated plants in soil introduced into the nursery operation. Prevention of this type of entry is only possible by growers knowing the pest status of plants entering the nursery. Plants grown under strict sanitation programs would be considered pest-free, and such plants could be safely introduced into the operation. A minor source of nematode entry into a nursery would be soil on hands, shoes, and clothing of visitors to the nursery or workers in the nursery.

DISPERSION. Groundbeds may be infested with nematodes by persons walking in the beds, placing their feet on groundbed containment walls, working soil in groundbeds with unwashed hands or tools, or by dropping contaminated objects into groundbeds. Plants on benches are contaminated by nursery workers handling the plants with unwashed hands or tools after working with either or both in phytoparasitic nematode-contaminated plantings, or by placing pest-infested objects on the bench. Contamination by man can be avoided by brushing shoes, washing hands, or cleaning tools before entering new plantings, and by avoiding placement of contaminated objects on beds or benches.

ENTRY AND DISPERSION BY ANIMALS AND INSECTS

ENTRY AND DISPERSION BY MAMMALS AND BIRDS. Rabbits, deer, squirrels, porcupines, groundhogs, rats, moles, pocket gophers, and mice have been known to directly or indirectly damage nursery plants (3). Animals should also be considered as possible disseminators of phytoparasitic nematodes and plant disease organisms since soil does adhere to their fur and feet. Domestic animals such as cats and dogs also disperse nematodes from site to site (Fig. 1). Birds may play a minor role in the dispersion of nematodes in the nursery.

Sea gulls feeding in sugarbeet fields carry sugarbeet nematode cysts into uninfested fields (Fig. 2). The digestive tract of starlings, trapped and killed in soybean cyst nematode-infested fields, have contained cysts with viable larvae (1). To prevent contamination by animals, the nursery should protect areas containing pest-free plants from animal intrusion. Some nurseries install screens in greenhouses which contain pest-free plants to keep out birds and animals (Fig. 3).



Fig. 1. A dog photographed shortly after taking a nap on top of a mass of pest-free potting soil in a nursery.



Fig. 2. Sea gulls feeding in a freshly plowed field to be planted in sugarbeets. (Courtesy of G. Thorne)

ENTRY AND DISPERSION BY INSECTS. Certain nematodes adhere to insect bodies and may be transported long distances. This, however, would probably be a negligible factor in the dispersion of phytoparasitic nematodes in nurseries.

A nematode responsible for the red ring disease of coconut palms (*Rhadinaphelenchus cocophilus* (Cobb, 1919) J. B. Goodey, 1960) has been recovered from the bodies of termites, ants, and palm weevils (3). This nematode can survive 10 days in the palm weevil gut and has been found alive in the feces of the weevil. Thirty-five percent of over a thousand weevils collected in a field of diseased palms harbored red ring nematodes (4). Nematode eggs have also been recovered from the body, vomit, and feces of common houseflies. The pinewood nematode, *Bursaphelenchus lignicolus* Mamiya and Kiyohara, is also carried into uninfested trees by a beetle, *Monochamus alternatus* Hope (5).

SURVEY AND DETECTION

MAN. Look for nursery workers entering areas and contaminating pest-free plants with soiled tools, clothes, and hands. Also note whether objects are situated on pest-free benches that do not belong on the bench.

ANIMAL. If domestic or wild animals are freely moving about the nursery site, one can suspect nematode contamination by animals in the area.

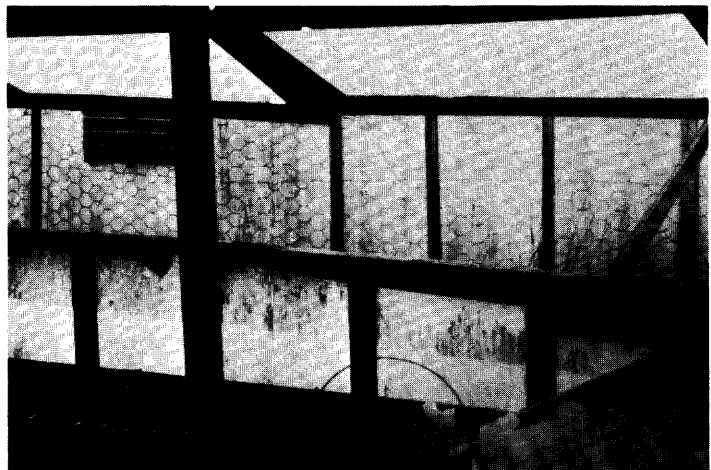


Fig. 3. Animal and bird screens installed in a pest-free nursery area.

LITERATURE CITED:

1. Epps, M. M. 1969. Survival of the soybean cyst nematode in the digestive system of birds. J. Nematol. 1:286 (Abstr.).
2. Fenwick, D. W. 1957. Red ring disease of coconuts in Trinidad and Tobago. Col. Office Great Brit., Report (40617-1). 55p.
3. Fitzwater, W. D. 1956. The control of animal pests. Amer. Nurseryman. 104(9):10, 92-94.
4. Hagley, E. A. C. 1962. The palm weevil, *Rhynchophorus palmarum* L., a probable vector of red ring disease of coconuts. Nature (London) 193 (4814):499.
5. Stokes, D. E. 1979. Pinewood nematode, *Bursaphelenchus lignicolus*, a nematode pest of some pine species. Fla. Dept. Agric. & Consumer Serv., Div. Plant Ind., Nematol. Circ. No. 53. 2p.